





WORKSHOP ON HAZARDOUS CHEMICALS RESEARCH, MONITORING POLLUTANT RELEASE AND TRANSFER REGISTER (PRTR)



Kyaka Hotel Machakos

31 SEPT-1ST OCTOBER, 2017

1 ABBREVIATIONS

GEF - Global Environment Facility

MENR - Ministry of Environment and Natural Resources

MOH – Ministry of Health

NEMA - National Environmental Management Authority

NIP - National Implementation Plan

PRTR – Polluter Release Transfer Register

UPOPs - Unintentionally Produced Persistent Organic Pollutants

SAICM - Strategic Approach to International Chemicals Management

KEPHIS-Kenya Plant Health Inspectorate Service

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2 EXECUTIVE SUMMARY

2.1 Background

Kenya has received a grant from the Global Environment Facility (GEF) towards mainstreaming sound chemicals management and reduction of unintentionally produced persistent organic pollutants from open burning of waste and thermal disposal of health care waste. This is a five year, 2016-2021, project being implemented by the Ministry of Environment and Natural Resources (MENR) in partnership with national and county government agencies, civil society and the private sector.

It is addressing linkages between sound chemicals management, waste management in general and health care waste in particular. In this regard, the project is addressing open burning of waste which leads to emissions of unintentionally produced persistent organic pollutants (UPOPs). The Project document is available at www.environment.go.ke. underprogrammes and projects – Kenya Chemicals and Waste and additional information is available in the convention site www.pops.int/upops.

Workshop Attendance

The workshop was held at Kyaka Hotel Machakos on 29-30 August, 2017. It was attended by 20 participants from Government, private sector and non-governmentalorganizations. The list of participants (annex 2).

2.2 Overall Workshop Objective:

To address implementation of Component 1 of the GEF/UNDP Project on Mainstreaming Chemicals Management and UPOPsReduction and especially Articles 9,10 and 11 of the Stockholm Convention on Persistent Organic Pollutants and chemicals under international regulation in SAICM. Discuss on POPs monitoring, develop monitoring plan, assess the capacity of the concerned institutions on monitoring, select 4 labs who are able to monitor these chemicals to be accredited, have 160 lab technologists trained, have POP curriculum is put in our universities.

Have a register by 3rd year of the project from which information can be shared. Make sure that all actors report on the chemicals.

2.2.1 Objectives of the workshop

The objectives of the workshop are:

- To analyze how extensively research and monitoring of chemicals under the Basel, Rotterdam and Stockholm Conventions can help promote sound chemicals management in Kenya
- How the monitoring can be integrated into ongoing institutional programs and existing chemicals related draft Policy on Environment and Development as well as cross sectoral institutional strategies.
- iii. To identify selected parameters which can be used as baseline for monitoring.
- iv. Discuss_opportunities and challenges that current_specialized institutions have.

- v. To evaluate if the environmental standards for emissions into air or releases into land are in harmony with international standards and if not propose areas in which these emissions and effluent for internationally listed chemicals elements can be developed
- vi. To document the risks related to chemicals from a life cycle perspective that ensures their proper disposal that avoids their release into the environment.

2.3 Scope

- i. Discuss the research and monitoring provided in the relevant MEA Articles
- ii. Consider what the institutions are doing currently in regard to control parameters
- iii. Identify lead institutions for monitoring POPS and especially dioxins and furans

2.4 Methodology

The following documents formed the basis for workshop deliberations;

- i. Prodoc
- ii. Relevant Quarter Plan
- iii. The Policy on Environment and Development, 2014
- iv. The Environment and Management and Coordination Act
- v. Sectoral Laws and policies
- vi. The texts for Basel Rotterdam, Stockholm and Minamata convention
- vii. The SAICM-overall Orientationand Guidance to sound chemicals management

Relevance to the Prodoc

This specific component relates to component 1 as follows:

Component 1. Streamlining sound management of chemicals and waste into national and county development activities through capacity building of MENR, MOH, NEMA, county governments of Nairobi, Kisumu, Nakuru and Mombasa and the NGOs.

Expected Outputs:

Outcome 1.1:

Under this outcome, the outputs of the workshop were:

- 1: Outcome 1.2 Monitoring activities intensified and strengthened and PRTR database in place.
- Output 1.2.1 At least 70% of laboratory analyses in research and monitoring institutions required to monitor the implementation of national policy on hazardous chemicals and wastes being carried on a cost recovery basis. One of the main shortcomings of project-funded monitoring project lies in the fact that sustainability of laboratory operation is not ensured after project end. Therefore, this output, rather to the procurement of equipment, will consist in the development and implementation of a national concerning the environmental and industrial monitoring, identifying POPs monitoring obligation for key industrial and waste management activities developed and implemented. In addition, proper training conducted key Kenyan laboratories on POPs monitoring will be carried out, and two key laboratories will receive the ISO 17025.accreditation for specific sampling and monitoring activities.
- Output 1.2.2 70% of universities nationwide include issues of hazardous chemicals and wastes, risks and legislation in curriculum. University curricula for chemical risk assessment and management of hazardous

- chemical and hazardous waste adopted by at least ____ training institution. One cycle of curricula completed in at least 2 universities within project timeframe.
- Output 1.2.3. PRTR Database and reporting system in place. A pilot POPs/PTS database will be established to contain data related to industrial sources, and POPs contaminated sites in at least 2 Kenyan counties, and available POPs environmental data countrywide.

3 PROCEEDINGS

Opening

The chairman Francis Kihumba welcomed the participants and a prayer from Mercy Kimanifollowed by self-introduction.

Ms.Mayiani made the opening remarks on behalf of the Director MEAs Richard Mwendandu. She emphasized on the role of PRTR in monitoring the pollutants and chemicals of concern; the aim being chemical pollution reduction and to capture indication of trends over time which can help to identify the effectiveness of environmental policy and sound management of chemicals. This will inform on any necessity of amendment or additions to be made on policy.

3.1 PRESENTATIONS BY INSTITUTIONS

3.1.1 Project Management Unit

Prodoc Provisions

Kihumbatook the members through Sound Chemicals Management Mainstreaming and UPOPs reduction in Kenya based on the BRS and eradication of POPs and project component 1 on policies, strategies, regulatory and integrating the provisions of streamlining chemicals management into development activities that are within the Stockholm Convention and the SAICM recommendations. He emphasised on the need to assess institutional capacities on U-POPs and waste management enhanced; monitoring activities intensified and strengthened and PRTR database be put in place.

3.1.2 Public awareness and communication

Creating and maintaining public goodwill towards a waste incineration project is critical to the success of the venture. Outreach should begin as early in the planning of the project as possible. The public and citizens' advocacy groups will have understandable concerns about the construction and operation of a facility and dealing with these openly and honestly will help prevent misinformation and misunderstanding.

Effective practices for improving public awareness and involvement include: placing advance notices in newspapers; distributing information to area households; soliciting comment on design and operational options; providing information displays in public spaces; maintaining pollutant release.

3.1.3 Monitoring

All chemicals listed in the MEAS need to be monitored in air, water, soil and animal and plant products.

Open burning of waste and high-efficiency combustion is facilitated by establishing a monitoring regime of key operating parameters. For pesticide, the levels in soil, water and products is critical to local and international standards and market requirements. Good combustion efficiency is related to the minimization of the formation of PCDD/PCDF within the incinerator, and the combustion temperature in the chamber should therefore be recorded.

Comment [ok1]: We need just recording? I suggest we have monitoring the temperature in every cycle of burning and monitoring the performance of the incinerator over time.

Recording temperature alone is not enough. We need to monitor if it is within the required level of temperature and the consistency.i.e reproducibility is required.

- Guidelines for POPS pesticides are available in the websites of MEAS and specifically www.basel.int.
- Guidelines for industrial POPS are also available.

Kenyans need to be made familiar with them.

Carbon monoxide, oxygen in the flue gas, particulate matter, hydrogen chloride (HCl), sulphur dioxide (SO_2), nitrogen oxides (NO_x), hydrogen fluoride (HF), airflows and temperatures, pressure drops, and pH in the flue gas should all be routinely monitored. These measurements reflect combustion conditions and give a general indication of the potential for formation and release of chemicals listed in Annex C. Periodic or semi-continuous measurement (continuous sampling and periodic analysis) of PCDD/PCDF in the flue gas can help the operator to ensure that releases are minimized and the incinerator is operating properly.

3.2 KEPHIS – Mr. Onesmus Mwaniki

Kenya Plant Health Inspectorate Service (KEPHIS) is a regulatory body established under KEPHIS Act No. 54 of 2012 whose mandate is to assure the quality of agricultural inputs and produce to promote food security and national growth.

The Corporation undertakes its mandate through seed certification, plant variety protection, phytosanitary (plant health) services and analyses of agricultural inputs and produce through our globally accredited laboratories. He stated that Kephis has the capacity to analyse; mercury, and other heavy metals (Cadnium, arsenic, lead etc) at a cost of 2500 per element, PCBs and pesticide residues at the cost of KES 21,500 per sample. The cost can be negotiated downwards depending on the volume of the samples based on the economics of scale.

KEPHIS has the basic infrastructure for the analysis of dioxins and furans in soilor water, however basic apparatus for ensuring analyst safety and reference standards, method adoption or development is required. Adoption of published or international method can take 2-3 months with all the apparatus and standards available. KEPHIS can participart in capacity building of other laboratories in pesticide and heavy method analysis.

3.3 SGS – Mr. Philip Abuor

SGS offers_analytical services on the following Matrices: Soil (natural, anthropogenic, sediments), Water (ground, waste, surface, seepage, drinking, sea...), Air (soil, gas, dust, particles, wastes_and asbestos.

He informed the members that they can analyse 451 molecules accredited to be separated and monitored in their laboratories on the emphasis that they also analyse dioxins and furans. He informed the participants that the charges for a sample is KES 20,000. He informed they can analyze POPs such asPesticides;Aldrin,Dieldrin,Chlordane,DDT,Endrin,Heptachlor,Mirex,Toxaphene,HeavyMetals;Mercury,

Arsenic, Chromium, Lead, Cadmium, Industrial Chemicals such as PCBs and HCBs and Industrial Chemicals such as Dibenzodioxins and Dibenzofurans. He further explained on sampling techniques which includes;

- ➤ Source emissions (Isokinetic Sampling/EPA Method 5)
- ➤ Metals USEPA Method 29- Source Sampling
- ➤ Absorption onto Adsorbent tubes (XAD2)
- Determination of Particulate Matter- ISO 9096
- Exhaust Emission Measurements- ISO 8178-2

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- Indoor/Workplace Air Quality- Pumped Method
- ➤ Ambient Air Sampling for SPM and PM10/2.5- HV/MV Sampler

He elaborated further on high-level laboratory specialized testing techniques on Dioxins, Furans & PCBs which areIon Chromatography, Atomic Emission Spectroscopy (ICP/AES /OES), LC-MS/MS,GC-MS/MS and GC-FID and Micro-pollutants&Multi-trace analysis.

3.4 KEBS - Mr. James Kioko

KEBS has capacity to carry out analysis of pesticides and pesticides residues. Currently_organo_chlorines and organophosphates pesticides are being analyzed using GC-MS/MS triple quadrupole and LC-MS/MS triple quarupole. Also being analyzed are pyrethrins.

Standards operating procedures are being developed to enable the analysis of dioxins and furans. KEBS has the capacity to carry out the analysis of mercury, lead, iron, chromium, arsenic and cadmium in water.

3.5 Water Resources Authority (WRA) – Mr Joram Njuguna

WRA has six regional offices in Kenya that carry out water quality monitoring activities in their region catchment areas. WRA also carries out regular monitoring of water in all the regions in every quarter. WRA has six water laboratories spread out throughout the country. In addition, it has several specific projects targeting pollution.

WRA also monitors effluent discharges. It uses the KEBS and NEMA standards and the Authority has predetermined sampling sites in all water basins. Under the Water Act 2016, section 21(C) one of the key mandates of WRA is "To regulate and protect water resources quality from adverse impact" The authority shall ensure that there is in place a national monitoring and georeferenced information system on water resources.

3.6 Government Chemist - Mr. William Munywoki

The Government Chemists division is made up of government reference laboratories mandated with carrying out chemical analysis on various samples. The laboratories include Toxicology, criminalistics, water, Serology and DNA Foods and drugs and Narcotics.

In the Analytical area laboratories, full chemical analysis of water samples for various parameters using the NEMA and EMCA standards some of which include heavy metals, pesticides COD and BOD.Equipment for analysis include, AAS, GC-MS, HPLC, and DR5000. Analysis of food samples for presence of various chemicals that could be harmful to human beings. These include pesticides, mycotoxins, heavy metals, methanol and drugs. The foods and drugs sections also deals with the chemical analysis of miscellaneoussubstances. Equipment for analysis include AAS, UV-VISIBLE, GC-MS and HPLC. In addition to this, analysis of chemical poisoning on biological samples is done. For example analysis of heavy metals in blood.

Charges for water and soil analysis are;

- Water analysis-kes3,000 per sample
- Soil-kes 3000 per sample

3.7 KEMRI – Mr. Nicholas Mwikabe

The medical research activities and services provided by KEMRI generate categories of biomedical waste from the laboratory areas. These wastes are classified as hazardous as per the Waste Management Regulations, 2006. Existing biomedical waste management measures include liquid chemical neutralization strategies, autoclaving, use of color coding receptacles for storage/segregation and collection by a NEMA licensed contractor {(Environmental and Combustion Consultants Limited) for KEMRI Nairobi facility} for onward incineration, records on the quantities of biomedical wastes generated, collected and disposed. KEMRI HQs facility in Nairobi has unique automated lab effluent neutralization equipment. Waste management process is supported by environmental audits with supporting evidence on air quality analysis, residue ash sampling and effluent discharge analysis. Other KEMRI facilities in Busia, Kisumu and Kilifi have same arrangements with on-site incineration facility.

KEMRI also has an internal chemical bunker used to store unused and expired chemicals that cannot be safely disposed with the available mechanism/incineration. This include heavy metals as listed in the 3rd schedule of NEMA act.

The MOH Government Chemist, Department of Mines and Geology in Nairobi, The UoN department Public Health and Pharmacology in Kabete and SGS Ltd are key partners in analytical services for KEMRI.

Alongside the research work, the institute provides various services which include Ethics Review for research, Wellness Programme, Rapid Emergency Response and Disease Surveillance, Clinical Laboratory diagnostic services, KEMRI Human DNA Identification Laboratory and Forensic Tests, Paternity/Maternity Test, HIV Proficiency test Panel & Services, Microbiological testing of Products/materials and Food Handlers Certification.

The institute is also engaged in Corporate Social Responsibility programmes to ensure the health and safety of the communities where it operates through community involvement and Public Health Education services.

3.8 University of Nairobi - Dr. Vincent Madadi

Presentation on PRTR participating institutions and TORS for international and national consultants (selection) and key steps in developing the PRTR which are;

- > Establish clear goals and objectives.
- Consult with interested and affected parties (stakeholders).
- ➤ Develop a manageable list of potentially hazardous pollutants or chemicals.
- > Define the scope of the system. who must report, to whom, how often, etc.
- ➤ Define what will be reported, e.g. data from point and/or diffuse sources,
- Name and co-ordinates of a facility, geographic descriptor of facility, latitude and longitude, etc.
- Analyse existing reporting requirements to identify how they can be used to attain PRTR objective
- Define how claims of confidential data will be handled.
- Develop data verification method(s).
- Define resource needs.
- Develop a programme review system, i.e. facilitate updates and modifications to the system as it grow and advances.
- Formulate an information dissemination strategy.

Summary table of institutions for PRTR is Annex 1, Summary of Monitoring activities and players Annex 2 and

Terms of Reference Annex3.

3.9 NEMA – Mr. MuitungiMwai

Presentation on theguidance pack for application of the emission licence for stationary sources as per air quality regulations, 2014 with emphasis on the 13th schedule, the fees chargeable and the contents are as follows;

- (1) Form IV: Application for Initial Emission License
- (2) Annex 1: Guidelines on Filling the Emission License Application Form
- (3) Annex 2: Stack Emission Report Format
- (4) Annex 3: Ambient Air Quality Monitoring Report Format
- (5) Annex 4: List of laboratories designated by NEMA to carry out air quality measurements
- (6)Annex 5: Emission License Fees as per the 13th Schedule
- (7) Annex 6: List of Controlled Areas as per 6th Schedule
- (8) Annex 7: Emission Limits for Controlled and Non-Controlled Facilities 3rdSchedule
- (9) annex 8: acceptable emission control technologies 8th schedule

4 WAY FORWARD

- 1. All to familiarize themselves with the relevant MEA articles on research, monitoring and public information
- MENR to address a letter to UON, KEPHIS,KEBS,GCD inviting them to propose monitoring and indicate cost
- 3. The data generated to meet the test of quality its essence to ministries and parliament.
- 4. The national consultant to lay the basis and then link up with the international consultant.
- There should be an electronic system amongst stakeholders for effective communication within themselves.
- The committee to sit down to review and filter the industrial information for effectiveness and correctness.
- 7. National plan for POPs monitoring to create monitoring market and financial mechanism implemented.
- 8. All to use the UNEP guidelines available in the BRS websites
- Institutions to address the relevance of confidentiality for data collected and how to share it with policy makes not to cause alarm
- 10. Two key laboratories on POPs analysis accredited to be set out to monitor identified sites.
- 11. MENR to ensure more institutions to be engaged for Sound Chemicals Management Mainstreaming and UPOPs reduction but key institutions to be consulted.

3.0 CLOSING REMARKS

Ms. Mayiani_Saino thanked participants for their active participation in ensuring that the objectives of the workshop were achieved.

There being no other business the workshop was adjourned at 2.30 p.mwith a prayer from Mary Mwangi.

5 ANNEX 1.BASELINE SURVEY OF POPS IN ENVIRONMENT

	air	water	soil	
Nairobi	Dandora	Fourteen falls	Dandora	
	Kikuyu*Steel	Ngong		
	indus	River(Njiru)		
		Nairobi River		
		(Njiru)		
		Mbagathi River		
		(Downstream EPZ)		
	Kitengela*/sheep	,	Kitengela/sheep and	
	and goats project		goats project	
	ECCL* (Stone			
	Athi)			
	ECCL old area*		ECCL old area*	
	Babandogo*			
	Ngong Hills -			
	baseline (Mwai)			
Athi River indus			1	
	KNH			
Mombass	Kibarani	Kibarani	Kibarani	
	Coast RH	Sabaki Estuary	Mwakinunge	
	Mazeras	Mkurumzi	J	
		River/Downstram		
		TIOMIN		
	Bamburi			
			1	
Nakuru	Gioto dumpsite	Final effluent into	Gioto dumpsite	
	•	Lake Nakuru	•	
	Nakuru CBD	Lake	Naivasha farming	
		Naivasha/town	area	
		side		
	Nakuru RH	Lake	Nakuru farming	
		Naivasha/flower	area	
		side		
		River Njoro		
Kisumu	Nyalenda	Lake Victoria	Nyalenda/LVEMP	
	/LVEMP		J	
	Kachoki dumpsite	Kisati	Kachoki	
	KEMRI	Nyando River	-	
	incinerator	.,		
	Kisumu referal	R. Nzoia/Webuye	Webuye	
	hospital	R. Nzoia/Midway		
	r	R. Nzoia/Mouth		

6 ANNEX 2. MERGED SUMMARY OF THE MONITORING

	AREA OF FOCUS	GAPS IDENTIFIED/ACTIVITY	PLAYERS	INTERVENTIONS
MENR - ENVIRONMENTAL POLICY				
	AIR QUALITY	No emphasis on open burning and it implications Highlight on the analysis of air quality and the role of the institutions mandated		Support to complete the Environmental Policy taking into account identified gaps
	Research, Monitoring and education	 Information Sharing – this has not been highlighted. Need to have a framework on transferring information to policy makers and publics All policies should have scientific backing. This not elaborated in the policy Environmental issues should be incorporated in education curriculum from lower to upper levels. 		
	Resource Mobilization	Include co-financing in the policy under the resource mobilization section. GEF requirement of 1:8 ratio.		
	WATER	Highlight on the analysis of Water quality and the role of the institutions mandated		Equip institutions that do analysis of water
AAK	& PCPB			
	Pesticides	 ECCL facility has capacity for the disposal of obsolete chemicals but needs to be upgraded to the Stockholm standards on emissions. Requirement of an approved landfill for disposal of obsolete chemicals/pesticides that cannot be disposed through incineration to offer a non-burn technology 	NEMA,MENR,PCPB Counties,AAK	Establish approved landfills for the disposal of pesticides and contaminated waste
	Pesticides	 Monitoring and surveillance of effects of products on the environment. Joint book for GHS with other stakeholder institutions. A legislation on level of education of persons retailing pesticides/agrochemicals 	PCPB,NEMA,researc h organizations PCPB,State Law Office,MOALF,AAK	Prepare national monitoring and surveillance protocols and plans. Strenghen relevant institutions to have annual monitoring scheme Harmonize national GHS manual Fast track PCPB Bill 2017 to legislate minimum qualifications for those selling pesticides

MoIT&C			
Industrial Chemicals	No engagement and encouragement the industry and professional users to and facilitate reduction or elimination of the production, use of POPs facilitate reduction or elimination of the production, use of POPs Output Description:	MoIT&C, KAM, KEPSA, MoE, KEBS, KIE, Kenya Cleaner Production Centre, KIRDI, Micro and Small Enterprises	Engage and encourage the industry and professional users to and facilitate reduction or elimination of the production, use of POPs Promotion on investment in local manufacturing of cleaner production equipment along with other emerging technologies facilitate reduction or elimination of the production, use of POPs.
KENYA BUREAU OF STANDARDS			
Standards dissemination Testing and monitoring	 Lack of sufficient funds to conduct awareness on GHS standards and standards on dangerous and hazardous waste Upgrading laboratory equipment by purchasing of: Main analyser: GC-MS/MS triple quadrupole, estimated cost \$400000 Sample preparation equipment: Accelerated solvent extraction (ASE)unit, estimated cost, \$150000. Sampling equipment: \$50000 (both air and leachate samplers) Laboratory staff hands on training, estimated cost, \$15000 Calibration standards, \$20000 	MOE KEBS PCPB	

KENY	YA CHEMICAL SOCIETY			
	Awareness Creation	 Awareness creation – curriculum on chemicals safety and security Policy document on chemical of concern Policy on chemicals handling and Transportation inventory in institutions. Inventory on stockpiles of chemicals held at institutions to avoid chemical landing in illegal hands/misuse (POPs) National Research Centre on Pollutants Monitoring and Evaluation with state of art equipment. 	KEBS NTSA KCS Government Chemist PCPB ECCL	Set up curriculum on CSS for University and technical institutions Training of SMES handling POPs Set up centre of excellence on National Research Centre on Pollutants Monitoring and Evaluation
		•	•	•
DEPA	ARTMENT OF OCCUPATIONAL SA			
	Workers Occupational Safety and Health	 Upgrading of analytical equipment laboratories. Lack Of calibration laboratories for the sampling equipment. Current sampling protocols for occupational hazards Specific trainings for officers is not available in the country. Information exchange and synergies among Govt agencies involved in chemicals. Networking of agencies that undertake sampling and analysis of chemicals. Local universities do not have specific training on occupational safety and health. Safety and health incorporated in the school curriculum at all levels. National survey to identify and locate workplaces and workers exposed to pops 	GovernmentUniversitiesKEBS	Support in acquisition of sampling and analytical equipment and training of officers. Support in information on pops Facilitate the formation of a central information center on pops which will be available to stakeholders. Local universities to start training of occupational Hygiene. Liaise with ministry of Education to incorporate safety and health in school at all levels of learning. Support to carry out the survey.
UNVI	ERSITY OF NAIROBI	to M. DOD.	4) 77 1	DE III VII I G
	Research, Monitoring and Education	No POPs monitoring programmes in the country.	1) Universities: Maseno, TUM, UON, TUK, MMU, Egerton, JKUAT, KU , Monitoring institutions.	I)Establish National Center for Environmental Monitoring & research ensure -systematic chemical monitoring programmes: Initiate air monitoring of the four Cities (Nairobi,

	2) Lack of necessary sampling equipment for air monitoring —to support targeted national monitoring programmes. 3) Lack of financial resources to support information exchange activities among scientists, public institutions and the general public. 4) Lack of MEAs in the teaching curricula & Research at Universities	2) Universities: Maseno, TUM, UON, TUK, MMU, Egerton 3) Universities, Research institutions, civil society, Regulatory agencies. 4) All Universities: MU, TUM, UON, TUK, MMU, Egerton, KU, JKUAT, MMUST,	Mombasa, Kisumu and Nakuru) in air & Water. Conduct national training of institutions on sampling and analysis of POPs in air and water. 2a) Procure high resolution GC/MS/MS and consumables for environmental air quality monitoring. 2b) Procure air quality sampling equipment for POPs, Hg and other metals: Mombasa, Nairobi, Kisumu and Nairobi. 3) Support quarterly workshops and annual scientific & Policy conferences; Mombasa, Nairobi, Nakuru& Kisumu 4)Develop teaching module that include MEAs in the University Curricula and research. 4b) Engage the Chemistry
			research.
GOVERNMENT CHEMIST			
Laboratory	 No legislation to control some chemical Equipment to analyze some PoPs not available Data from analytical work not shared Technique for disposal old/obsolete chemicals lacking 		Support in developing a specific legislation Support in acquiring Equipment Establish mechanism Technique for disposal
WRA			
Water	 No equipment for sampling monitoring of MEAs in water Technical expertise for sampling and analysing data 	• WRA • NEMA	• Support in acquiring Equipment for Monitoring chemicals covered under

CENTRE FOR ENVIRONMENT JUSTICE A	lacking for institutions that are involved in monitoring Parameters of MEAs concern are not analyzed Monitoring Data from analytical work not shared among institutions Establish a center of excellence for Water	KEBS Universities MEA such as AAS, Mercury analyzers Establish a Water Center of excellence. Liaise with tertiary institution for Capacity Building /Training of technical expertise Establishing a centralized database for data sharing
Public awareness and stakeholders sensitization	 Illegal entry of restricted chemical products and compliance monitoring Awareness creation to public on impacts of chemicals and available alternatives, including best environmental practices Socio economic studies on impacts of chemicals Integration of lead paints standards into chemicals regulations to anchor the 90ppm limit into the regulations Public awareness on dental mercury and stakeholders sensitization on the phase down measures stipulated in Minamata Weak compliance monitoring and enforcements 	KEBS, Dentists Anti-counterfeit agency KEPHIS KRA – customs NEMA Ministry environment To environment To env

7 ANNEX 3 TERMS OF REFERENCE FOR CONSULTANTS ON PRTR

The Prodoc provides for an international consultant on PRTR. WARMA and UON were detailed to come up with draft TOR. Dr. Madadi took the participants through the suggested Terms of Reference as follows;

- Examine the existing policies framework & institutional mandates relating to chemicals monitoring and gaps to be addressed for the purpose operationalization of the national PRTR.
- 2) Examine the existing legal, regulatory and enforcement system for hazardous waste management with regard to Pollution monitoring of hazardous waste releases into air, water and soil.
- 3) Review existing data sets and reporting formats in various key institutions¹.
- 4) Examine the categories of hazardous wastes as defined by MEAs and SAICM generated in the country and propose a suitable model for wastes classification that will facilitate data collection for the purpose of updating the PRTR.
- Examine the existing PRTR databases, operational platforms and advice the PMU on the appropriate database for Kenya PRTR system.
- 6) Review the existing capacities and needs for key stake holders for the purpose of implementing the national PRTR database.
- 7) Visits relevant national stakeholders and collect information from previous/on-going national regional projects related hazardous waste management activities that can feed into the national PRTR.
- 8) Describe theoperationalization of afunctional Kenya PRTR system incorporating the linkages to the key data sources.
- 9) Develop the institutional framework for the key institutions to contribute data to the national PRTR.
- 10) Develop the model and modalities for data presentation and reporting to and from the national PRTR system.
- 11) Work with the International consultant to operationalize the Kenya PRTR database.

8 ANNEX 4 LIST OF PARTICIPANTS

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